

In the claims:

claims 1-12 (canceled)

claim 13. (new) Process for the production of gasoline with a low sulfur content that comprises at least the following stages: at least one selective hydrogenation of diolefins that are present in the starting gasoline (stage a), at least one stage for transformation of light sulfur-containing compounds that are present in the gasoline (stage b), at least one fractionation (stage c) of the gasoline that is obtained in stage a or b into at least two fractions: a light fraction and a heavy fraction, a desulfurization treatment in one stage (stage f) of at least a portion of the heavy fraction that is obtained from the fractionation in stage c.

claim 14. (new) Process for the production of gasoline with a low sulfur content that comprises at least the following stages: at least one selective hydrogenation of diolefins that are present in the starting gasoline (stage a), at least one fractionation (stage c) of the gasoline that is obtained in stage a into at least two fractions: a light fraction and a heavy fraction, a stage (stage d) for transformation of sulfur-containing compounds that are selected from the group that consists of the thiophene, the thiophenic compounds and the mercaptans that are present in at least one fraction that is obtained in stage c, a desulfurization treatment in one stage (stage f) of at least a portion of the heavy fraction that is obtained from the fractionation in stage c.

claim 15. (new) Process according to claim 14 that also comprises at least one stage for transformation of the light sulfur-containing compounds that are present in the gasoline (stage b).

claim 16. (new) Process according to claim 13 or 15, in which stages a and b are

carried out simultaneously in the same reactor.

claim 17. (new) Process according to one of claims 13, 14 or 15, in which stage b and/or d makes it possible to increase the molecular weight of said sulfur-containing compounds.

claim 18. (new) Process according to one of claims 13, 14 or 15, in which the gasoline that is obtained from stages a or b is fractionated into a light fraction, at least one intermediate fraction and a heavy fraction.

claim 19. (new) Process according to claim 18 that also comprises at least one stage d for transformation of sulfur-containing compounds that are selected from the group that consists of the thiophene, the thiophenic compounds and the mercaptans that are present in the light fraction and/or in at least one intermediate fraction.

claim 20. (new) Process according to one of claim 16, in which stage b and/or d makes it possible to increase the molecular weight of said sulfur-containing compounds.

claim 21. (new) Process according to one of claim 16, in which the gasoline that is obtained from stages a or b is fractionated into a light fraction, at least one intermediate fraction and a heavy fraction.

claim 22. (new) Process according to one of claim 17, in which the gasoline that is obtained from stages a or b is fractionated into a light fraction, at least one intermediate fraction and a heavy fraction.

claim 23. (new) Process according to claim 21 that also comprises at least one stage d for transformation of sulfur-containing compounds that are selected from the group that consists of the thiophene, the thiophenic compounds and the mercaptans that are present in the light fraction and/or in at least one intermediate fraction.

claim 24. (new) Process according to claim 22 that also comprises at least one stage d for transformation of sulfur-containing compounds that are selected from the group that consists of the thiophene, the thiophenic compounds and the mercaptans that are present in the light fraction and/or in at least one intermediate fraction.